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ABSTRACT

Prepared by the Eurydice European Unit on the basis of data supplied by its national partners, this document analyzes national policies for education in information and communication technology (ICT). Highlights include: (1) national policy and official documents on the use of ICT; (2) national or official bodies responsible for supervising the national policy; (3) national projects for the introduction of technology are on the increase; (4) schedule for implementing the projects; (5) sharing responsibility for the purchase and maintenance of hardware; (6) expenditure on equipment predominates in specific budgets; (7) projects with a variety of aims; (8) many countries include ICT in the primary level curriculum; (9) the most common approach to ICT in primary education is to use it as a tool; (10) ICT is in almost all curricula at lower secondary level; (11) a variety of approaches to ICT coexist in lower secondary education; (12) ICT is in most curricula at general upper secondary level; (13) ICT is usually taught as a separate subject in general upper secondary education; (14) most specialist ICT teachers are found at the secondary level; and (15) in-service training is often available but rarely compulsory. A directory of the Eurydice network is included. (MES)

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Information and communication technology in the education systems in Europe

National education policies, curricula, teacher training

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INTRODUCTION

The European Commission has published *Key data on education in Europe* since 1994. This report, which appears once every two years, now covers the 29 countries taking part in the Socrates Programme. It is the outcome of close collaboration between Eurydice, the information network on education in Europe, and Eurostat, the statistical office of the European Communities. The special interest of the report lies in this collaboration, as a result of which a very wide range of different statistical and qualitative indicators are combined in a single study. This combined presentation provides the insight required to improve our understanding and perception of education systems in Europe and the way they have changed.

The fourth edition of *Key data on education* was published at the start of the year 2000, and covers all levels of education, including the pre-primary stage. The demographic context and the entry into working life of young people who have left the education system are discussed, along with specific topics, such as teachers, the teaching of foreign languages, the education of children with special needs, and educational applications of information and communication technology.

The chapter set out here deals with the analysis of national policies for education in information and communication technology. Prepared by the Eurydice European Unit on the basis of data supplied by its national partners, the chapter demonstrates clearly how this sector has now become an educational priority. This trend is unquestionably linked to the development of the Internet and the very many communication resources which are set to become part and parcel of everyone's daily life. Special attention is drawn to the following aspects:

EDUCATION POLICIES ARE INCREASINGLY GEARED TO THE USE OF ICT

Information and communication technology lies at the heart of national policies. All European countries today possess official documents aiming to promote their use (Figure J1). The integration of ICT into school systems is becoming progressively more widespread. In a few cases a long-standing priority, ICT policies are increasingly being implemented. Nearly everywhere, bodies have been set up to promote or supervise the implementation of recommendations. Education systems are being directly targeted by national projects drawn up in all countries (Figure J3).

BUDGETS ARE RARELY MANAGED EXCLUSIVELY AT CENTRAL GOVERNMENT LEVEL

National statistical data available regarding the purchase and maintenance of ICT equipment, or the ICT budget are hard to compare. No standardized database exists to this day. This chapter does not therefore contain any information on the scale of school equipment and facilities or the size of the budget allocated to ICT in the various countries. The difficulty of obtaining this sort of information is explained partly by the shared responsibilities for the purchase and maintenance of equipment. Indeed, as Figure J4 shows, in Europe it is very unusual to find financial management resting solely with the ministry in central government. Equipment budgets are most often managed either at the local level or jointly, with the responsibility shared between several layers of authority. The way budgets are allocated between equipment and human resources has also proved difficult to identify clearly in many countries. However, where the breakdown is known, equipment has taken precedence in expenditure (Figures J5 to J7).

ICT IS PRESENT IN SCHOOL CURRICULA AND THE AIMS PURSUED ARE BROADLY SIMILAR

Even at primary level, numerous countries have written ICT objectives into the minimum compulsory curriculum. Elsewhere, the integration of ICT has been provided for or offered in an optional way (Figure J11). The use of ICT as a tool to be used for projects or for educational content is the approach most commonly recommended for primary schools (Figure J12). Pre-accession countries typically teach it as a separate curriculum subject. At secondary level, ICT is more often taught in this way (Figure J15). The aims pursued differ little with the level of education (Figures J13, J16 and J19). The different approaches recommended are to be set in the context of teacher training. ICT specialists are most likely to be found at secondary level (Figure J20). They teach ICT as a subject in its own right, whereas teachers of other subjects make use of ICT as a tool.

NOT ALL COUNTRIES HAVE INCLUDED ICT IN THE COMPULSORY CURRICULUM OF INITIAL TEACHER TRAINING

While in many countries ICT has been included as a compulsory part of curricula for pupils, this is not the case in initial curricula for teacher training, for either primary or secondary level. An ICT course in teacher training is compulsory in fewer than half the European countries. In the remainder it is optional (Figures J21 to J23).

This appears to be inconsistent with the integration of ICT into courses. Indeed, only teachers who have themselves been trained in the use of ICT will be in a position to supervise their pupils effectively as they become fully familiar with and gradually master its essential resources. Although all the countries have laid down a policy of in-service training for teachers taking account of these aspects, it would appear no less urgent to ensure that all future teachers acquire the necessary skills. This is an inescapable requirement if the younger generations are to master ICT.

Indeed, securing quality education in all schools presupposes that teachers are not left to provide for their own training entirely on their own initiative, in such an important priority field.

It is hoped that this special chapter of *Key data on education* will provide everyone interested in ICT with exactly what they need in order to understand how educational policies are developing in relation to this particular field.

Luce Pépin

Head of the Eurydice European Unit

CODES AND ABBREVIATIONS

COUNTRY CODES

EU	European Union
B	Belgium
B fr	Belgium – French Community
B de	Belgium – German-speaking Community
B nl	Belgium – Flemish Community
DK	Denmark
D	Germany
EL	Greece
E	Spain
F	France
IRL	Ireland
I	Italy
L	Luxembourg
NL	Netherlands
A	Austria
P	Portugal
FIN	Finland
S	Sweden
UK	United Kingdom
E/W	England and Wales
NI	Northern Ireland
SC	Scotland

EFTA/EEA	European Free Trade Association / European Economic Area
IS	Iceland
LI	Liechtenstein
NO	Norway
Pre-accession countries	
BG	Bulgaria
CZ	Czech Republic
EE	Estonia
LV	Latvia
LT	Lithuania
HU	Hungary
PL	Poland
RO	Romania
SI	Slovenia
SK	Slovakia
CY	Cyprus

NATIONAL ABBREVIATIONS IN THEIR LANGUAGE OF ORIGIN

GCE	General Certificate of Education	UK (E/W,NI)
GCSE	General Certificate of Secondary Education	UK (E/W,NI)
HF	Højere Forberedelseseksamen	DK
ICT	Information and communication technology	

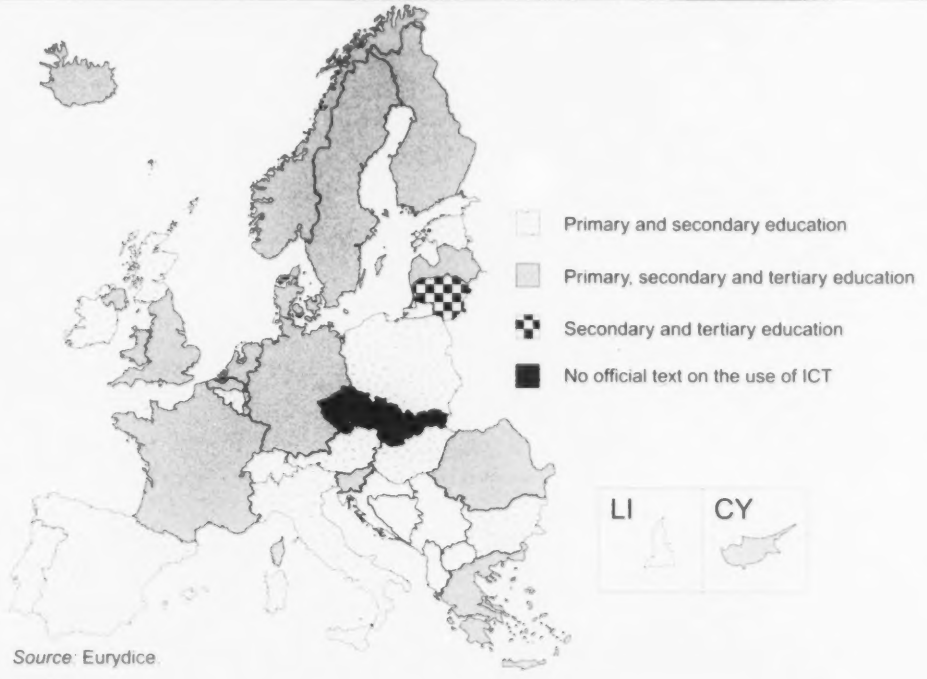
NATIONAL POLICY AND OFFICIAL DOCUMENTS ON THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGY

During 1997/98, a national or official policy encouraging the use of information and communication technology in education has been in operation in almost all countries of the European Union, the EFTA/EEA and the pre-accession countries (except the Czech Republic and Slovakia).

This national policy has generally taken the form of one or more official documents (law, decree, circular, recommendation). In the majority of countries, the official documents on the use of ICT date from the 1990s, even the late 1990s.

In all countries, these official documents cover at least compulsory education (primary and secondary). In some countries, as illustrated in the Figure J1, they also cover tertiary education. Documents are also devoted to pre-primary education in the Flemish Community of Belgium, Spain, France, Italy, Luxembourg, Portugal, Finland and Sweden in the EU, and in Slovenia in the pre-accession countries.

FIGURE J1: EDUCATION LEVELS COVERED BY OFFICIAL DOCUMENTS ON THE USE OF ICT (IN FORCE DURING 1997/98)



Source: Eurydice

Additional notes

Netherlands: In tertiary education, only teacher-training institutes are involved in the national programme launched in 1997.
United Kingdom: The National Grid for Learning intends to support learners in all sectors of education.
Czech Republic: In 1999, the government approved the document 'Towards the information society' and has required the Ministry of Education, Youth and Sport to take account of it in formulating its national education policy.

NATIONAL OR OFFICIAL BODIES RESPONSIBLE FOR SUPERVISING THE NATIONAL POLICY

In all the countries where official documents advocate the use of ICT in teaching, there are one or more national or official bodies that are entrusted with the task of applying them or promoting practical measures and centralising initiatives.

The number of such bodies varies from country to country, but their duties and responsibilities normally include some or all of the following: they define the objectives to be pursued; they select and/or supply the hardware and the software; they organize teacher training and the development of new software; they monitor and coordinate the various initiatives implemented in this area; they are responsible for the application of the decisions taken and the agreements concluded and they collect information to assess the impact of the projects and programmes set in place; etc.

FIGURE J2: NATIONAL OR OFFICIAL BODIES WITH A REMIT FOR ICT IN EDUCATION, 1997/98

European Union	
B fr	Ministère de la Communauté française – Administration Générale de l'Enseignement et de la Recherche Scientifique
B de	Ministry: Organisation of the Unterrichtswesens
B nl	Department for Education Policy Co-ordination Division
DK	Undervisningsministeriet UNI*C Center for Teknologistøttet Uddannelse – CTU
D	Kultusministerien / Wissenschaftsministerien *(Länder)* Bundesministerium für Bildung und Forschung *(Bund)*
EL	Armodies Ypiresies YPEPTH Pedagogiko Instituto Instituto Technologias Ypologiston Tmimata Anotaton Ekpaideutikon Idrymaton Instituto Epexergasias Logou Ypeuthynoi Plhroforikis kai Neon Technologion (PLHNET) Dieuthynseon Protovathmias kai Deyterovathmias Ekpaideusis Nomon Periferiaka Epimorfotika Kentra Etairies systimaton pliroforikis
E	PNTIC (Ministerio de Educación y Cultura) Dirección General de Evaluación; Servicio de Renovación Pedagógica Dirección General de Ordenación e Innovación Educativa, etc (depending on the Autonomous Communities)
F	Ministère de l'éducation nationale, de la recherche et de la technologie Rectorats
IRL	Department of Education and Science – National centre for technology in education
I	Coordinatore del Programma di sviluppo delle tecnologie didattiche Comitato tecnico per il Programma di sviluppo delle tecnologie didattiche Gruppo di lavoro della Direzione Generale per l'Istruzione Tecnica Nucleo operativo del Programma di sviluppo delle tecnologie didattiche Nuclei di riferimento dei Provveditorati agli studi Ispettori tecnici
L	Centre de technologie de l'éducation – CTE Service de Coordination de la Recherche et de l'Innovation pédagogiques et technologiques – SCRIPT
NL	Procesmanagement ICT
A	Bundesministerium für Unterricht und kulturelle Angelegenheiten Landesschulräte Bezirksschulräte Schulleiter
P	Programa Nonio-Seculo XXI (Ministry of Education)
FIN	Opetusministeriö – Undervisningsminsteriet Opetushallitus – Utbildningsstyrelsen Opetuksen, tutkimuksen ja kulttuurin tietoyhteiskuntaneuvottelukunta – Delegationen för informationssamhället inom utbildningen, forskningen och kulturen Sitra
S	Statens skolverk
UK (E/W, NI)	British Educational Communications and Technology Agency – Becta Local Education Authorities (E/W) Strategic Management Group (NI) New Opportunities Fund Teacher Training Agency – TTA (E)
UK (SC)	Scottish Council for Educational Technology Scottish Office Superhighways Task Force

FIGURE J2 (CONTINUED): NATIONAL OR OFFICIAL BODIES WITH A REMIT FOR ICT IN EDUCATION, 1997/98

	EFTA/EEA
IS	Ministry of Education, Science and Culture
LI	Schulamt Arbeitsgruppen P, Sek I und Sek II
NO	Kirke-, utdannings- og forskningsdepartementet Nasjonalt læremiddelsenter Forsknings- og kompetansenettverk for IT I utdanningen Statens utdanningskontor
	Pre-accession countries
BG	Ministry of Education and Science
CZ	Ministerstvo školství, mládeže a tělovýchovy
EE	Haridusministeerium Tiigrihüppe Sihtasutus PHARE 'Infosüsteemid hariduses' Programme EENet
LV	Izglītības un zinātnes ministrija Latvijas Universitāte Uzraudzības padome
LT	Švietimo ir Mokslo Ministerija Informatikos ir Prognozavimo Centras – IPC
HU	Oktatási Minisztérium Sulinet Iroda Megyei Pedagógiai Intézetek
PL	Ministerstwo Edukacji Narodowej
RO	Council for ICT of the ministry of National Education National Commission for ICT Council for Coordination of the Romanian Education Network
SI	SI/RO Programme Council Ministry of Education and Sport National Education Institute Centre for Vocational Education and Training
SK	Ministerstvo školstva SR, Metodické centrá
CY	Ypourgeio Paideias kai Politismou

Source: Eurydice.

Additional notes

Netherlands: Since 1999, the official body has been the *Directie ICT, Ministerie van Onderwijs, Cultuur en Wetenschappen.*
Sweden: A new project, *ITiS*, was set up in the autumn of 1998.
Bulgaria: Within the next two years Bulgaria expects to set up a central agency/unit.

NATIONAL PROJECTS FOR THE INTRODUCTION OF TECHNOLOGY ARE ON THE INCREASE

One or more national or Community-wide projects aimed at introducing ICT into secondary education have been put in place in all the countries of the EU and the EFTA/EEA and in most pre-accession countries, with the exception of the Czech Republic and Cyprus (lower secondary education). Many countries also ran projects in primary education in 1997/98, with the exception of the German-speaking Community of Belgium for the countries of the EU, and in the Czech Republic, Latvia, Lithuania and Poland for the pre-accession countries.

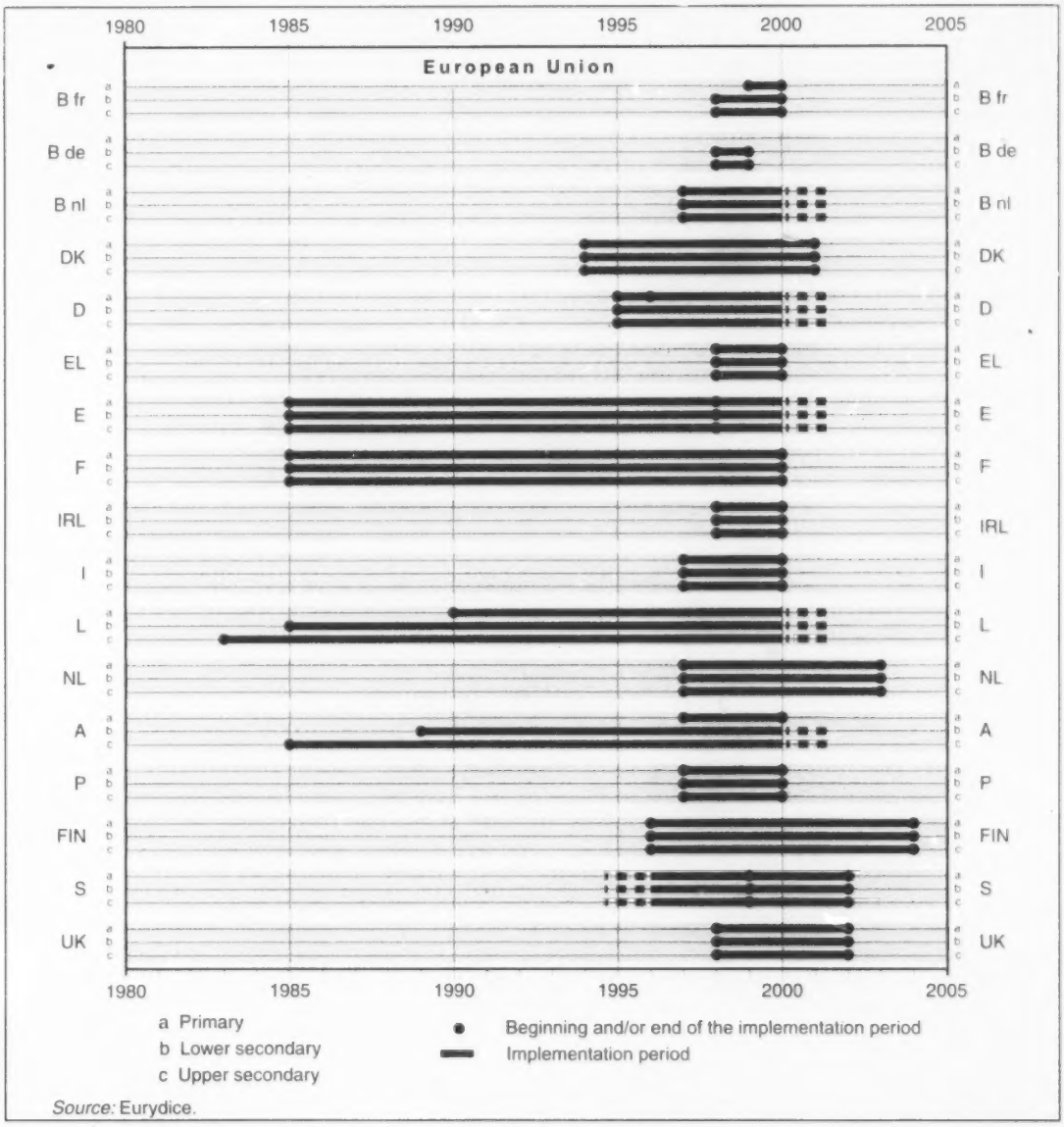
In Spain, plans are being developed through the *Programme of New Information and Communication Technologies* (directly run by the ministry) and the different Autonomous Communities, covering three levels of education (primary, lower secondary, upper secondary).

These national or Community-wide plans go hand in hand with local initiatives. They are particularly numerous in Finland and Sweden.

SCHEDULE FOR IMPLEMENTING THE PROJECTS: OFTEN BEYOND THE YEAR 2000

Projects at all three levels of education generally started after 1995. The most long-standing initiatives were launched in the '80's; some involved the three levels of education (Spain and France) but they more often concerned the general upper secondary level (Luxembourg, Austria, Bulgaria, Lithuania and Cyprus).

FIGURE J3: IMPLEMENTATION SCHEDULE FOR TYPICAL ICT PROJECTS. PRIMARY AND SECONDARY EDUCATION, 1980-2005

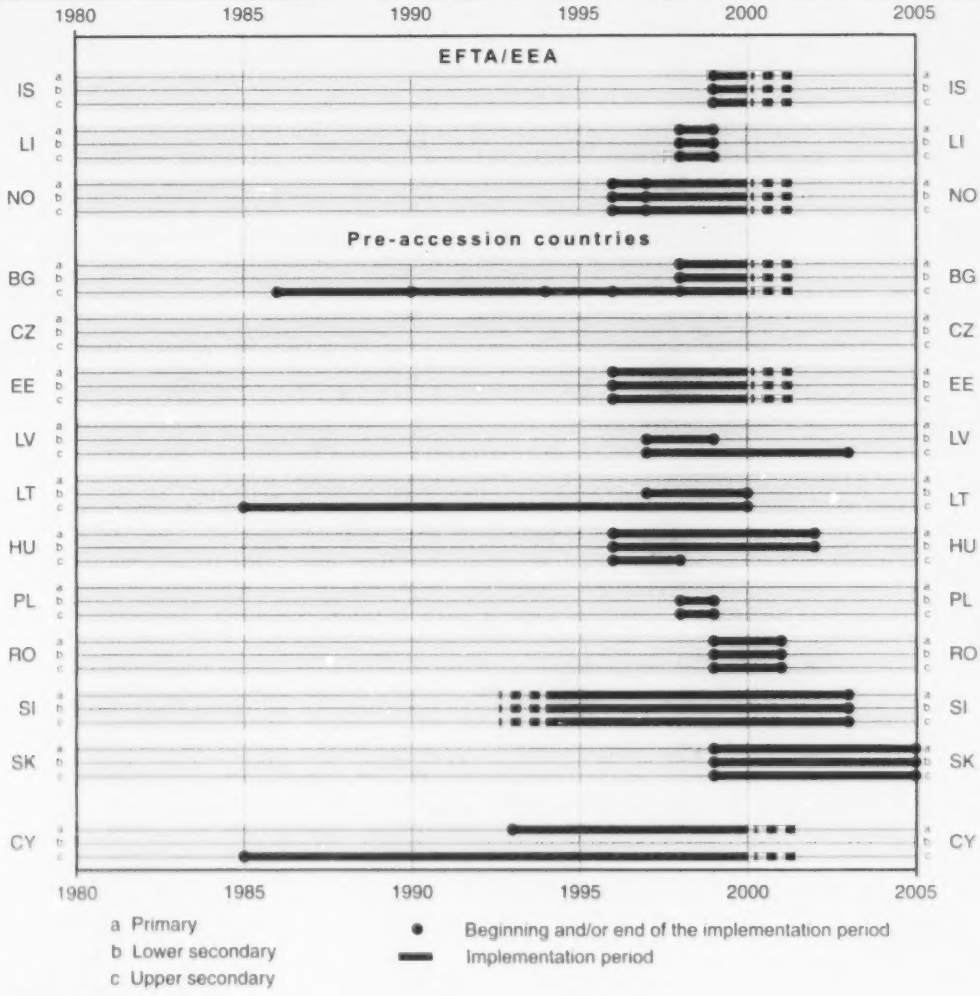


Source: Eurydice.

In 1999, a project will get under way for primary education in the French community of Belgium and Iceland and for the three levels of education in Romania and Slovakia. When a date is fixed for completion, the full implementation of the projects is planned for 1999 or 2000 in most cases.

The schedule for implementation extends beyond that in the Netherlands, Finland, Slovenia, and Slovakia. In Bulgaria, no decision has as yet been taken as regards the full implementation of the programme for compulsory education, and the schedule has not yet been decided.

FIGURE J3 (CONTINUED): IMPLEMENTATION SCHEDULE FOR TYPICAL ICT PROJECTS
PRIMARY AND SECONDARY EDUCATION, 1980-2005



Source: Eurydice.

Additional notes

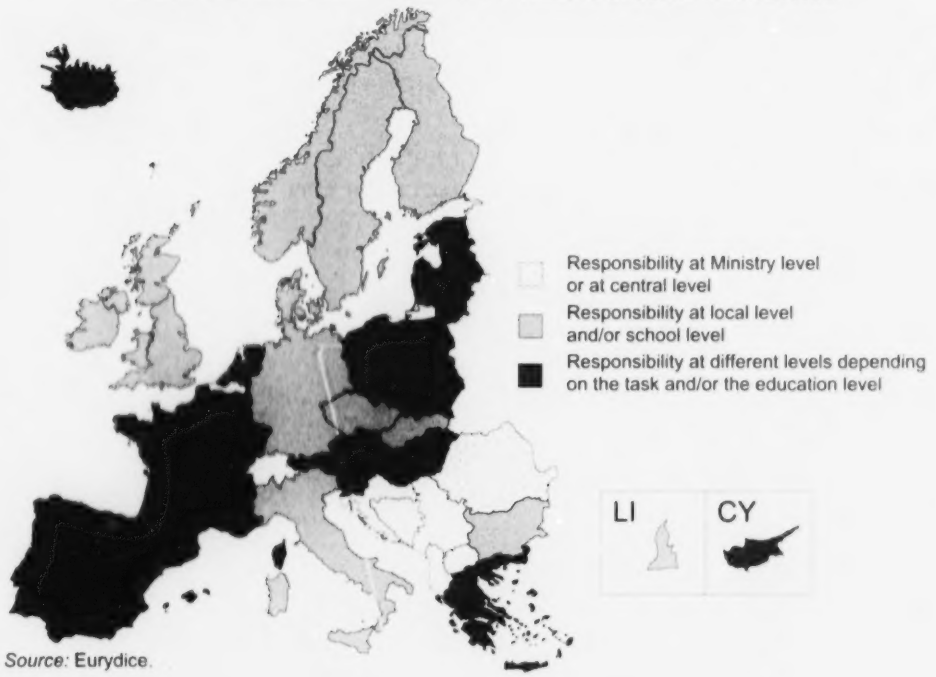
Bulgaria: A new national policy for the use of ICT in education was developed and adopted in the summer of 1998. An implementation programme has been drawn up with special attention being given to funding.
Czech Republic: A debate of national education programmes will be launched in 2000, covering among other things the place of ICT.

SHARING RESPONSIBILITY FOR THE PURCHASE AND MAINTENANCE OF HARDWARE

In some countries all the responsibility for the purchase and maintenance of equipment rests at one level of authority. But in most countries this function is undertaken by the local authority and/or at school level. In some countries it is centralized. For example, in the Flemish Community of Belgium and in upper secondary education in Austria, it is the ministry that handles the purchase and maintenance of hardware. In Romania, this is the responsibility of the ministry, assisted by a non-governmental organisation. In Luxembourg, at secondary level, the ministry is helped in this task by the *Centre de technologie de l'éducation.*

In several countries, depending on the level of education and on the type of expenditure (purchase of hardware, software, maintenance of equipment) the responsibilities differ and are sometimes shared by various levels of authority.

FIGURE J4: RESPONSIBILITY FOR THE PURCHASE AND MAINTENANCE OF HARDWARE. PRIMARY AND SECONDARY EDUCATION. PROJECTS UNDER WAY IN 1997/98


Responsibility at Ministry level or at central level
Responsibility at local level and/or school level
Responsibility at different levels depending on the task and/or the education level
LI
CY

Source: Eurydice.

Additional notes

Belgium (B de): The situation shown relates to secondary education. There is no ongoing project in primary education.
Belgium (B nl): The ministry defines the framework (PC/KD 1998-2002) and provides the additional finance available for infrastructure. The schools decide how to allocate the money between the purchase of hardware and software and in-service training.
Luxembourg: In primary education, responsibility for purchasing and maintenance is assumed at local level; in secondary education, the Minister is assisted in this task by the *Centre de technologie de l'éducation.*
Austria: In primary education, responsibility for purchasing and maintenance is assumed by different levels of authority; in lower secondary education, this is the local level; in upper secondary education, the ministry is responsible for school equipment.
Bulgaria: Over the next two years, the central level will play a significant role in providing equipment in schools.
Czech Republic: The situation shown relates to secondary education; there is no ongoing project in primary education.
Poland: In primary education, responsibility for purchasing and maintenance is assumed at local level; in secondary education, different levels of authority share it.
Slovakia: The situation shown relates to upper secondary education; there is no ongoing project in primary or lower secondary education.
Cyprus: The situation shown relates to primary and upper secondary education; there is no ongoing project in lower secondary education.

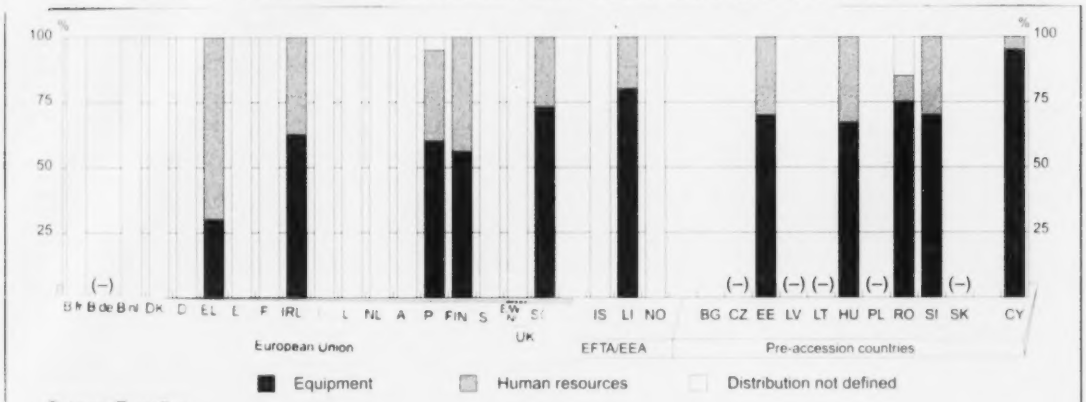
EXPENDITURE ON EQUIPMENT PREDOMINATES IN SPECIFIC BUDGETS

All countries have allocated specific budgets to implementing the projects, with the exception of Bulgaria at primary level.

It is not always possible to ascertain the distribution among the various headings. For example, in Spain the *PNTIC* does not allocate a budget for human resources because the staff and the teachers specialising in ICT are civil servants and their pay comes out of a different budget. In France, teacher training and human resources are the responsibility of the State whereas equipment is the responsibility of the local authorities. In Italy, the distribution is different as it depends on the projects undertaken by the schools. In Norway, the subsidies cover expenditure on human resources, but not on equipment. In Luxembourg, at primary level, the equipment budget is the responsibility of the municipality. In Austria, at primary level, there is no national budget; the *Länder* and municipalities may or may not provide a budget.

Where it is possible to ascertain how the budget is distributed among the various headings, it can be seen that in general 60%-80% of the budget is devoted to the purchase of equipment and 20%-40% to human resources. However in Greece, at all education levels, these figures are reversed. In Luxembourg, throughout secondary level, in Bulgaria and Cyprus at upper secondary level, almost the entire budget (90-95%) is devoted to equipment.

FIGURE J5. DISTRIBUTION OF THE SPECIFIC BUDGET BETWEEN THE PURCHASE OF EQUIPMENT AND EXPENDITURE ON HUMAN RESOURCES. PRIMARY EDUCATION. PROJECTS UNDER WAY IN 1997/98



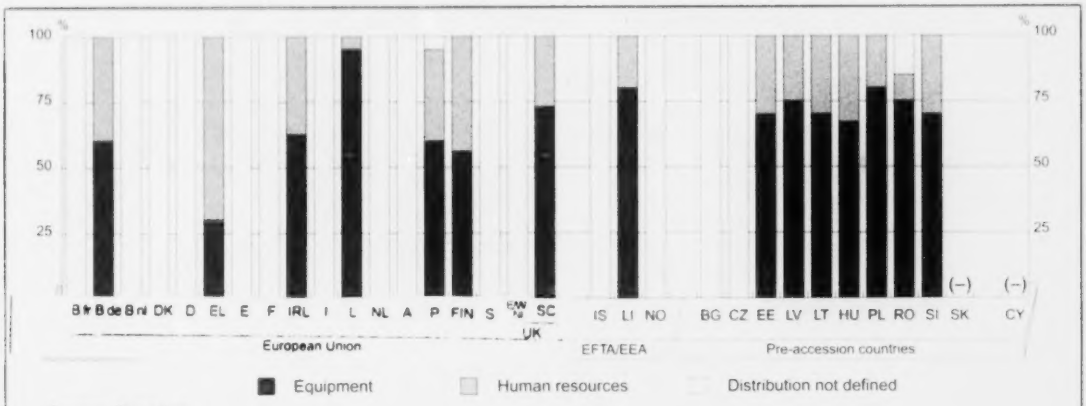
Source: Eurydice.

(–): There is no national project on the use of ICT at this level of education.

Additional notes

Finland: The expenditure on human resources includes the cost of the development of teaching methods and environments.
United Kingdom (E/W, NI): The programme of £700 million for the *National Grid for Learning* up to 2002 includes provision for ICT infrastructure, services and content. Some of this funding is in the form of grants paid at a rate of 50% of expenditure. The £230 million fund available through the National Lottery from 1999 is specifically to train serving teachers and school librarians (at both primary and secondary level).

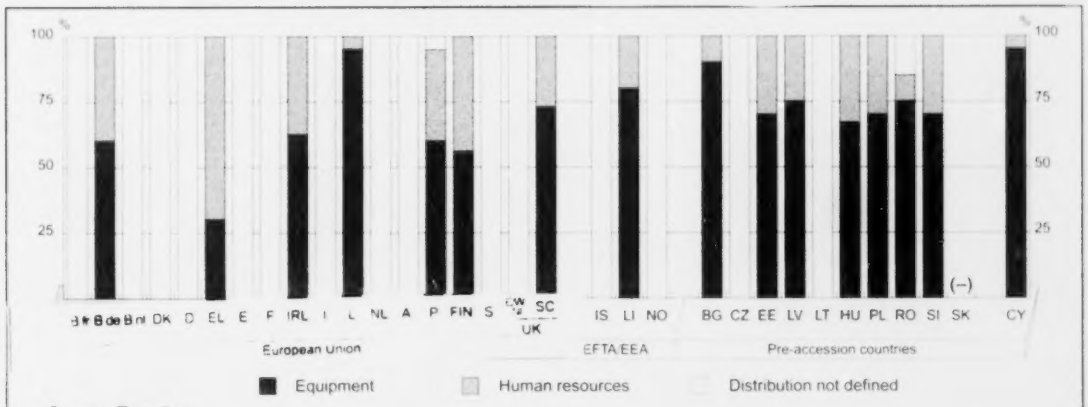
FIGURE J6 DISTRIBUTION OF THE SPECIFIC BUDGET BETWEEN THE PURCHASE OF EQUIPMENT AND EXPENDITURE ON HUMAN RESOURCES. LOWER SECONDARY EDUCATION: PROJECTS UNDER WAY IN 1997/98



Source: Eurydice.

(–): There is no national project on the use of ICT at this level of education.

FIGURE J7 DISTRIBUTION OF THE SPECIFIC BUDGET BETWEEN THE PURCHASE OF EQUIPMENT AND EXPENDITURE ON HUMAN RESOURCES. GENERAL UPPER SECONDARY EDUCATION PROJECTS UNDER WAY IN 1997/98



Source: Eurydice.

(–): There is no national project on the use of ICT at this level of education.

Additional notes

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United Kingdom (E/W, NI): The programme of £700 million for the *National Grid for Learning* up to 2002 includes provision for ICT infrastructure, services and content. Some of this funding is in the form of grants paid at a rate of 50% of expenditure. The £230 million fund available through the National Lottery from 1999 is specifically to train serving teachers and school librarians (at both primary and secondary level).
Latvia: The expenditure on human resources includes an 'others' heading.

PROJECTS WITH A VARIETY OF AIMS

Objectives have been set in all existing projects. Six categories have been defined here. The objectives relate to equipment; the acquisition and construction of software; the skills of teachers and pupils and the use of the Internet.

In most countries, and throughout the three levels of education, the stated objectives cover the six categories. However certain countries have not set objectives for the acquisition, distribution and development of software.

However, in Denmark, for compulsory and general upper secondary education, the projects have concentrated on developing teachers' skills and on fostering the use of the Internet in general, through the creation of a common Internet service provider, the *Sektornet*, for all schools to further promote the development of pupils' skills. In the Netherlands a national education network, the *Kennisnet*, in which schools, libraries and museums are linked together, has been created in 1999.

In Austria (Hauptschule) and Bulgaria, the plan worked out for lower secondary education centres on developing the skills of teachers and pupils.

Several countries' projects also include objectives other than those cited in the above categories. They cover aspects such as the administration of the education system, monitoring the education system and/or innovations to it, training all citizens in the use of the new technologies, etc.

FIGURE J8: OBJECTIVES IN ICT.
PRIMARY EDUCATION. PROJECTS UNDER WAY IN 1997/98

	B fr	B de	B nl	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK (E/W, NI)	UK (SC)
Equipment (availability, renewal, accessibility, etc.)	●	(–)	●		●	●	●	●	●	●	●	●	●	●	●		●	●
Acquisition and/or distribution of software		(–)	●		●	●	●	●		●	●	●	●	●			●	●
Development of teachers' skills	●	(–)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Development of pupils' skills	●	(–)			●	●	●	●	●	●	●	●	●	●	●	●	●	●
Help in the development of software/ educational software		(–)			●	●	●	●	●	●		●		●	●	●	●	●
Use of the Internet	●	(–)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

	IS	LI	NO	BG	CZ	EE	LV	LT	HU	PL	RO	SI	SK	CY
Equipment (availability, renewal, accessibility, etc.)	●	●	●		(–)	●	(–)	(–)	●	(–)	●	●	(–)	●
Acquisition and/or distribution of software	●	●	●	●	(–)	●	(–)	(–)	●	(–)	●	●	(–)	●
Development of teachers' skills	●	●	●	●	(–)	●	(–)	(–)	●	(–)	●	●	(–)	●
Development of pupils' skills	●	●	●	●	(–)	●	(–)	(–)	●	(–)	●	●	(–)	●
Help in the development of software/ educational software	●		●		(–)	●	(–)	(–)	●	(–)		●	(–)	●
Use of the Internet	●	●	●	●	(–)	●	(–)	(–)	●	(–)	●	●	(–)	●

Source: Eurydice.

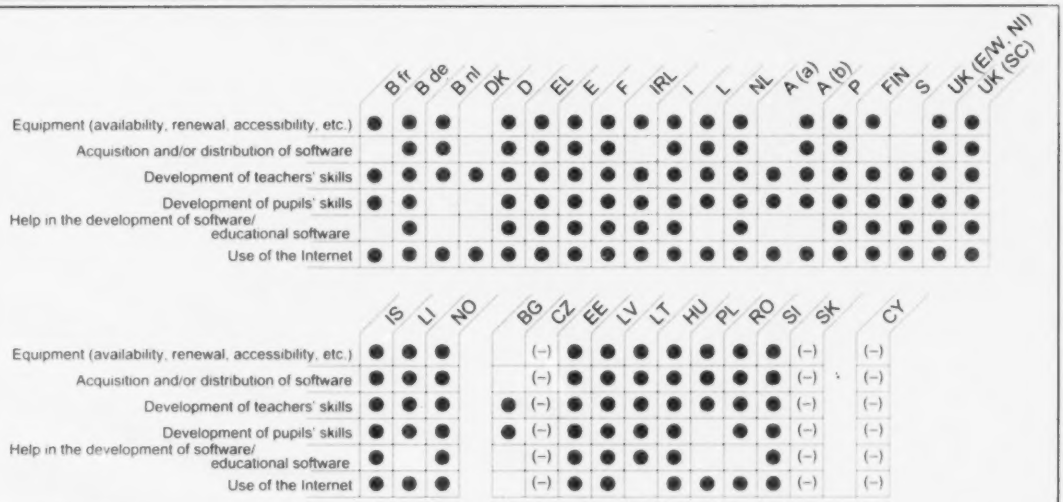
(–): There is no national project on the use of ICT at this level of education.

Additional notes

Belgium (B fr): Hardware is being supplied to all primary and secondary schools over a period of three years (1998-2000).
Sweden: From 1998/99, the *ITiS* project's objectives relate to equipment and distribution of software. In general, the municipalities have the overall responsibility for these areas.

FIGURE J9: OBJECTIVES IN ICT

LOWER SECONDARY EDUCATION. PROJECTS UNDER WAY IN 1997/98



Source: Eurydice.

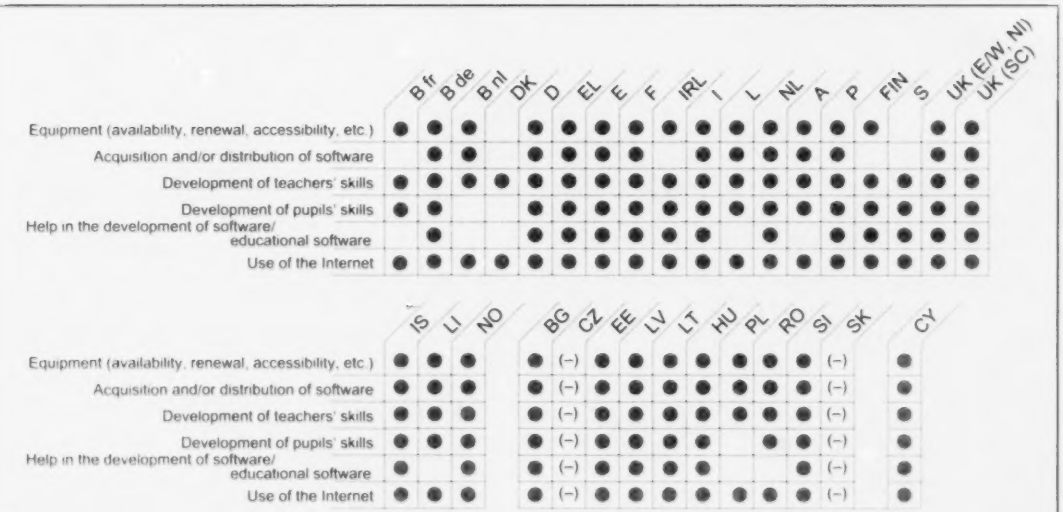
(–): There is no national project on the use of ICT at this level of education.

Additional notes

Belgium (B fr): Hardware is being supplied to all primary and secondary schools over a period of three years (1998-2000).
Austria: (a) *Hauptschulen*, (b) *Allgemeinbildende Höhere Schulen*.
Sweden: From 1998/99, the *ITiS* project's objectives relate to equipment and distribution of software. In general, the municipalities have the overall responsibility for these areas.

FIGURE J10: OBJECTIVES IN ICT.

GENERAL UPPER SECONDARY EDUCATION. PROJECTS UNDER WAY IN1997/98



Source: Eurydice.

(–): There is no national project on the use of ICT at this level of education.

Additional notes

Belgium (B fr): Hardware is being supplied to all primary and secondary schools over a period of three years (1998-2000).
Sweden: From 1998/99, the *ITiS* project's objectives relate to equipment and distribution of software. In general, the municipalities have the overall responsibility for these areas.

17

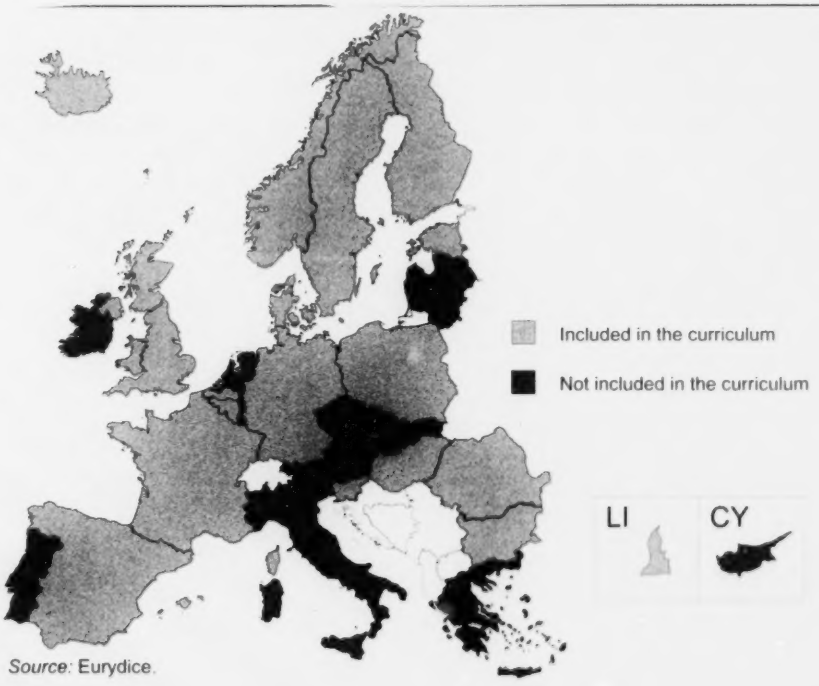
17

MANY COUNTRIES INCLUDE ICT IN THE PRIMARY LEVEL CURRICULUM

In primary education, ICT is included in the curriculum in the majority of EU, EFTA/EEA and pre-accession countries. Elsewhere, plans for its inclusion are ongoing. Depending on the country concerned, the presence of ICT in the curriculum is more or less recent. In the United Kingdom, ICT has been a statutory requirement in England and Wales since the introduction of the National Curriculum in 1988, and in Northern Ireland (as an educational theme woven through the main subjects) since the introduction of the Northern Ireland Curriculum from 1990.

In the United Kingdom, the curriculum does not specify the **number of hours** to be devoted to this compulsory subject as the schools are free to decide on the allocation of the hours of teaching. In Poland, 27 hours a year are allocated to this subject.

FIGURE J11: INCLUSION OF ICT IN THE CURRICULUM.
PRIMARY EDUCATION, 1997/98



Source: Eurydice.

Additional notes

Belgium (B fr): The decree on 'Missions' (1997) plans to integrate ICT into education by means of Skills Platforms. These platforms, under discussions since 1994, have been adopted and clearly defined in 1999.
Germany: The *Kultusministerkonferenz* and the legislation of the different *Länder* make recommendations on the use and the role of ICT in school life.
Greece: ICT was not part of the curriculum in 1997/1998, but a pilot project to investigate the use of ICT for teaching the other subjects is being carried out in 10 selected primary schools.
Italy: There are no recommendations on the use of ICT in the curriculum, but one of the aims of the *Programma di Sviluppo delle Tecnologie Didattiche* is to improve the effectiveness of the teaching-learning process and to improve didactic organization both for single subjects and for the acquisition of general skills through the use of ICT.
Netherlands: Since 1998/99, the new media have been part of the cross-curricular attainment targets for primary education.
Iceland: ICT is part of the curriculum since 1999/2000.
Bulgaria: ICT is included in the curriculum as an elective subject, schools are free to teach it.
Czech Republic: A debate of national education programmes will be launched in 2000, covering among other things the place of ICT.
Latvia and **Lithuania**: ICT is an extra-curricular subject (taught after class hours).

Explanatory note

By curriculum is meant any form of official recommendation regarding the subjects taught.

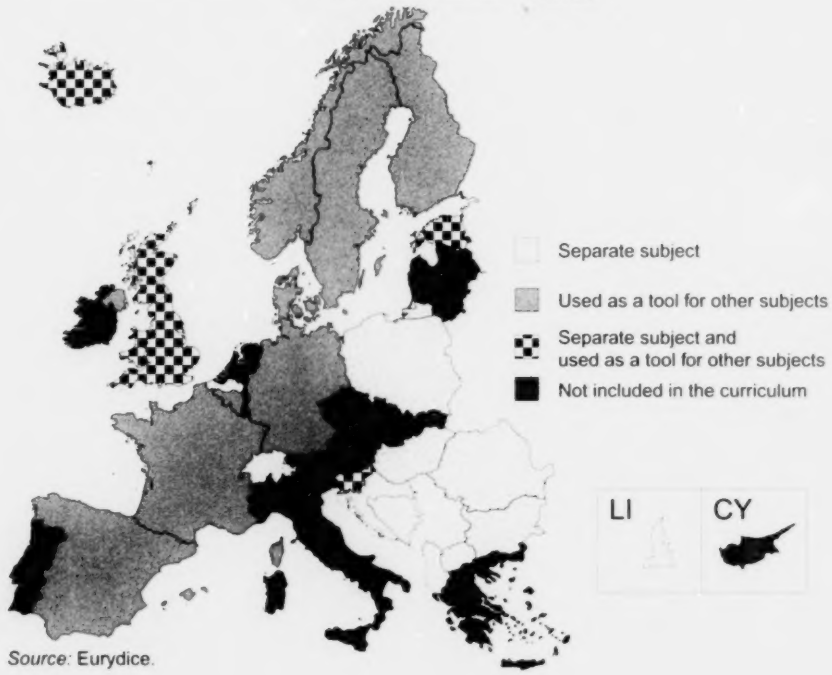
ICT is offered as an option in some countries, in some cases only recently (Liechtenstein, Bulgaria and Romania). In the case of an elective course, the number of hours to be devoted to it is seldom specified in the curriculum. It depends sometimes on the school, as is the case in Finland, Estonia and Hungary. Where a certain number of hours is specified, it varies: 26 hours a year in Slovenia, 28 hours in Romania and 40 hours in Liechtenstein.

Pupils' results in this subject are taken into account for **progression** to the next year in certain pre-accession countries: Estonia, Poland and Romania. A **certificate** is awarded on the basis of the knowledge and skills acquired in this subject at the end of primary school in Liechtenstein.

THE MOST COMMON APPROACH TO ICT IN PRIMARY EDUCATION IS TO USE IT AS A TOOL

When ICT is included in the curriculum, two main approaches may be distinguished. It may be taught either as a separate subject, or used as a tool and/or for carrying out interdisciplinary projects. The use of ICT as a tool or to carry out such projects is the most widespread approach in the EU countries that have brought it into the curriculum for primary education.

FIGURE J12: APPROACHES TO ICT DEFINED IN THE CURRICULUM. PRIMARY EDUCATION, 1997/98


Separate subject
Used as a tool for other subjects
Separate subject and used as a tool for other subjects
Not included in the curriculum
LI
CY

Source: Eurydice.

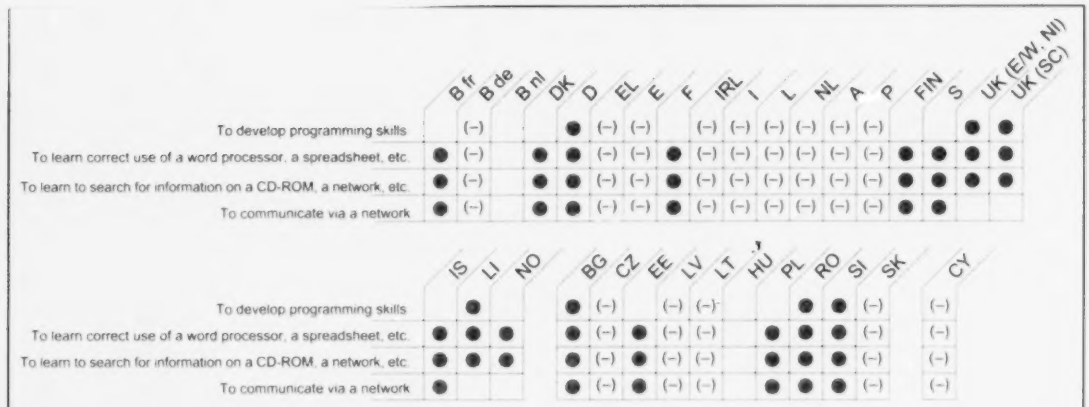
Additional notes

Germany: The *Kultusministerkonferenz* and the legislation of the different *Länder* make recommendations on the use and the role of ICT in school life.
Greece: ICT was not part of the curriculum in 1997/1998, but an experiment in using ICT for teaching other subjects is being carried out in 10 selected primary schools.
Spain: The curriculum merely issues recommendations on the use of ICT.
Luxembourg: ICT constitutes a learning tool increasingly incorporated in all subjects.
Netherlands: Since 1998/99, the new media have been part of the cross-curricular attainment targets for primary education.
Austria: The integrative use of ICT will soon be included in the curriculum.
Poland: Since 1998, ICT has been a compulsory subject in the schools equipped with it, in the 4th, 5th and 6th years.

ICT is a separate compulsory subject in only some countries: in the United Kingdom (with the exception of Northern Ireland), in Iceland and Liechtenstein and in several pre-accession countries. In the United Kingdom (England, Wales, Scotland), Estonia and Slovenia, ICT is used to carry out interdisciplinary projects as well as it being taught as a subject in its own right. In these three countries, the recommendations or regulations on the use of ICT for projects are dealt with in a **separate section** of the curriculum. This is also the case in Norway.

Whatever the approach advocated, the **objectives** pursued by the teaching or the use of ICT at primary level can cover various categories. Four major fields are distinguished here, namely programming, the use of software, information searches and communication via a network.

FIGURE J13: OBJECTIVES DEFINED IN THE CURRICULUM FOR THE TEACHING OR THE USE OF ICT. PRIMARY EDUCATION, 1997/98



Source: Eurydice.

(–): This subject is not included in the curriculum at this level of education.

Additional notes

Belgium (B nl): By the end of primary school pupils are required to be able to use ICT and to process data.
Germany: The *Kultusministerkonferenz* and the legislation of the different *Länder* make recommendations on the use and the role of ICT in school life.
Netherlands: Since 1998/99, the new media have been part of the cross-curricular attainment targets for primary education; objectives have been defined in all areas except programming skills.
Finland: The curricula are designed at the local level on the basis of the national core curriculum. The schools define the objectives and what is taught on the basis of the national guidelines.
Sweden: ICT is to be used as a tool in the classroom, although basic competencies required for it are not listed.
Bulgaria: Programming and communication via a network will appear only during the second part of the programme.

Of the EU and EFTA/EEA countries, at this level of education, Germany is the only country in which the recommendations of the *Kultusministerkonferenz* and the legislation of the different *Länder* cover the four categories of objectives, indicating their interest in using ICT for multidisciplinary purposes. The United Kingdom and Liechtenstein pursue all the categories of objectives, except for communication via a network. In England and Wales, the curriculum is deliberately not technically specific, in order to allow for technological change. The objectives are defined in terms of the skills to be acquired and functions to be accomplished through the use of ICT, rather than in terms of particular tools, techniques and applications to be used.

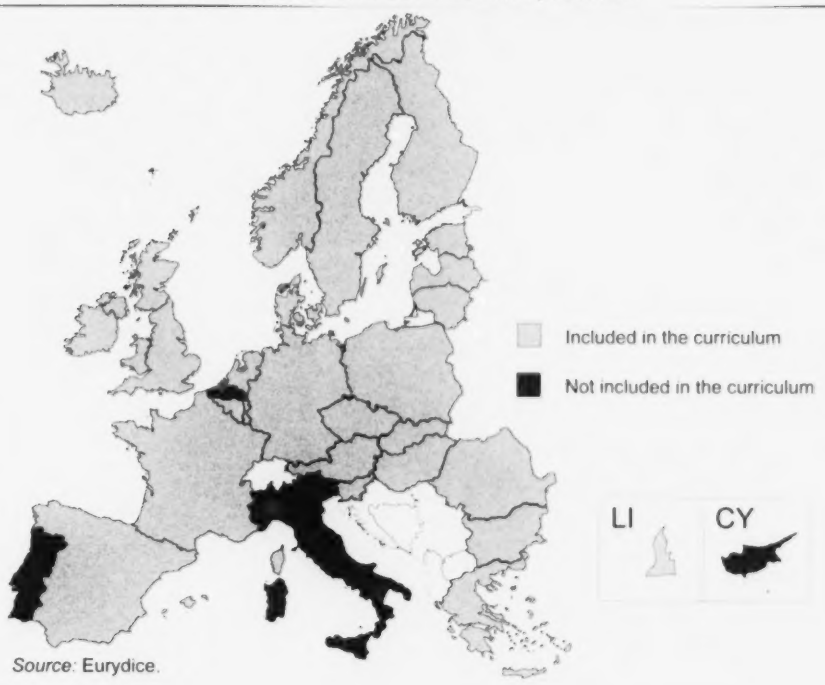
In the French Community of Belgium, Denmark, France, Finland, Sweden and Iceland, the development of programming skills is not an objective defined in the curriculum. In the other countries, the objectives pursued as regards the use of ICT to conduct projects includes in particular the use of software and/or learning to search for information.

In pre-accession countries, the range of cover is more broad-based. In Bulgaria, Romania and Slovenia, all the categories are mentioned. In Estonia and Poland, the development of programming skills is not an objective at this level of education. In Hungary, no specific objectives are defined, but the course aims to familiarize pupils with ICT and to enable them to acquire basic knowledge.

ICT IS IN ALMOST ALL CURRICULA AT LOWER SECONDARY LEVEL

ICT is included in the lower secondary curriculum in a large majority of countries. Recommendations concerning ICT are more recent in some countries than in others: Germany was the first to introduce the subject into its curriculum in the late 1970s. Greece and Scotland included it in the early '80's, but it only became part of the curriculum in Ireland and Liechtenstein in 1998. In the United Kingdom, England and Wales have had a statutory requirement to teach ICT since the introduction of the National Curriculum in 1988, and it has also been compulsory (as an educational theme crossing subject boundaries) in Northern Ireland since the introduction of the Northern Ireland Curriculum in 1990. In some countries, ICT is offered as an option. ICT only recently appeared in the curriculum in the German-speaking Community of Belgium, Bulgaria and Romania.

FIGURE J14: INCLUSION OF ICT IN THE CURRICULUM.
LOWER SECONDARY EDUCATION, 1997/98



Source: Eurydice.

Additional notes

Italy: There are no recommendations on the use of ICT in the curriculum, but one of the aims of the *Programma di Sviluppo delle Tecnologie Didattiche* is to use it to improve the effectiveness of the teaching-learning process and to improve the didactic organization both for single subjects and for the acquisition of general skills.
Slovakia: ICT is a compulsory subject only in the classes specialized for Mathematics, Physics and IT.

Explanatory note

By curriculum is meant any form of official recommendation relating to the subjects to be taught.

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In Germany, ICT is offered as a compulsory subject, as a compulsory option or as an elective subject. In the Czech Republic, it is an elective subject at the discretion of the head of school.

When ICT is a compulsory curriculum subject, the **number of hours** allocated is generally specified in the curriculum. It is 80 hours (maximum) a year in Liechtenstein. If it is an elective subject, the number of hours is sometimes specified. This varies from 14 hours in the Czech Republic to 100 hours in the German-speaking Community of Belgium. Whether the subject is compulsory or elective, the number of hours devoted to ICT may be decided at school level (Finland, the United Kingdom – England, Wales and Northern Ireland, Estonia and Latvia) or on the year during which it is taught (France).

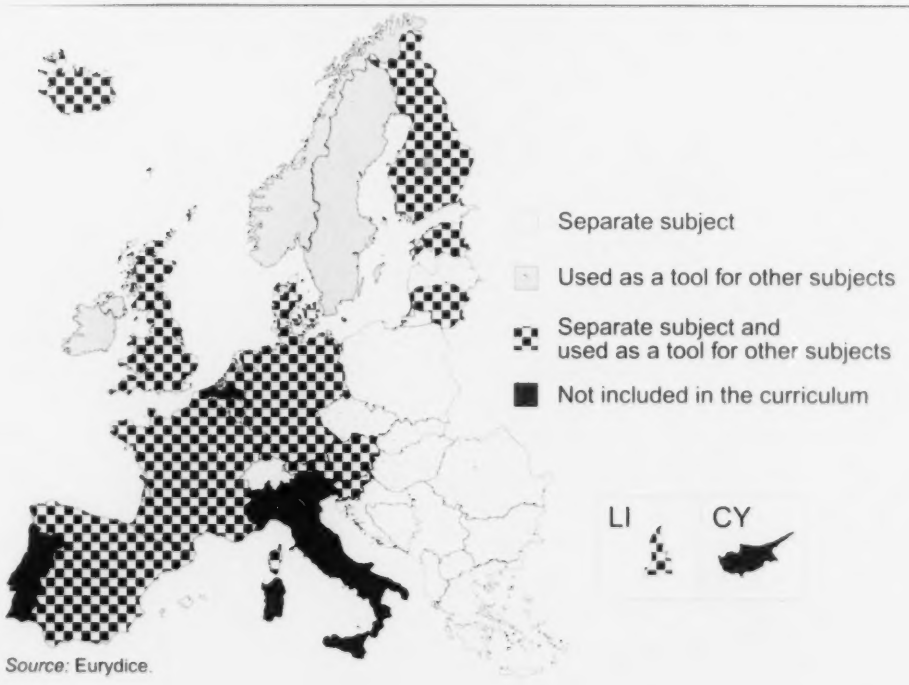
The results obtained in this subject are taken into account for **progression** to the next year in the French Community of Belgium, Germany (when the subject is compulsory or a compulsory option), Spain, Luxembourg, Bulgaria, Estonia, Hungary, Poland, Romania, Slovenia and Slovakia.

An **external assessment** is organized for this subject in France (at the end of lower secondary education).

A grade on the annual pupil's school report or a **certificate** at the end of lower secondary education (or the single structure) is awarded on the basis of the knowledge and skills acquired in this subject in the German-speaking Community of Belgium, Germany, Luxembourg, Liechtenstein, the Czech Republic, Hungary, Slovenia and Slovakia.

A VARIETY OF APPROACHES TO ICT COEXIST IN LOWER SECONDARY EDUCATION

FIGURE J15. APPROACHES TO ICT DEFINED IN THE CURRICULUM. LOWER SECONDARY EDUCATION. 1997/98


Separate subject
Used as a tool for other subjects
Separate subject and used as a tool for other subjects
Not included in the curriculum
LI
CY

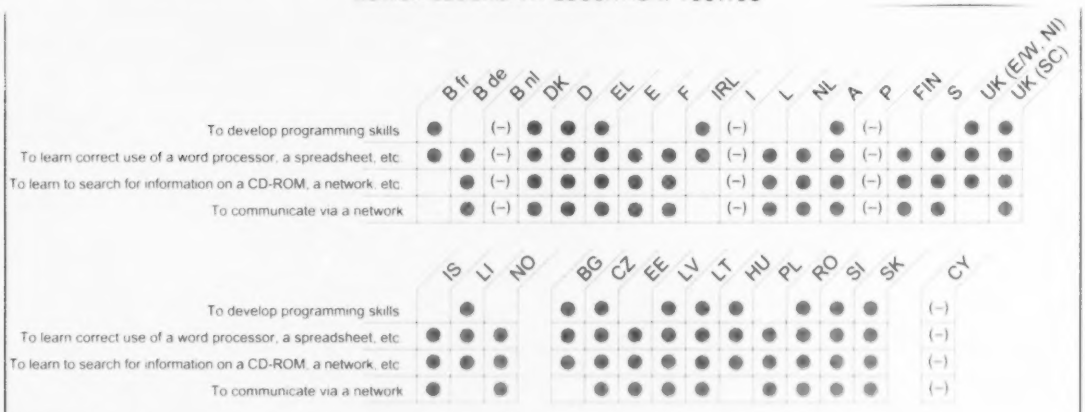
Source: Eurydice.

Additional notes

Finland: The curricula are prepared at the local level on the basis of the national core curriculum. Schools can decide to include ICT in the curriculum as an elective subject.

At this level of education, few curricula advocate the use of ICT solely in interdisciplinary projects. They exist in Ireland, Finland, Sweden, the United Kingdom (Northern Ireland) and Norway. Elsewhere, this approach is supplemented or replaced by ICT being a curriculum subject in its own right.

FIGURE J16: OBJECTIVES DEFINED IN THE CURRICULUM FOR THE TEACHING OR THE USE OF ICT
LOWER SECONDARY EDUCATION, 1997/98



Source: Eurydice.

(–): This subject is not included in the curriculum at this level of education.

Additional notes

Finland: The curricula are designed at the local level on the basis of the national core curriculum. The schools define the objectives and what is taught on the basis of the national guidelines.
Sweden: ICT is to be used as a tool in the classroom, although basic competencies required for it are not listed.
United Kingdom (E/W): The National Curriculum Programme of Study at Key Stage 3 includes communicating and handling information, but does not make specific mention of communication via a network. However, this is becoming increasingly important in view of the development of the National Grid for Learning.

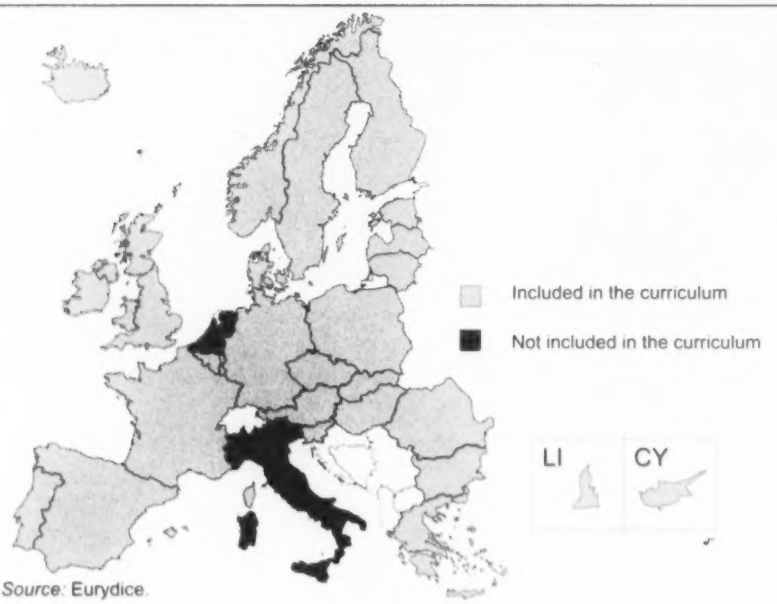
In general, the **objectives** of the courses in ICT at lower secondary level concern the four categories presented in the Figure J16. However, the development of programming skills is not specified at this level of education in the German-speaking Community of Belgium, Spain, France, Luxembourg, the Netherlands, Finland, Sweden, Iceland and Norway among the EU and the EFTA/EEA countries. Among the pre-accession countries, the development of programming skills is not included in the curriculum in Estonia and Poland. Communication via a network is not one of the objectives or key skills of the French Community of Belgium, Ireland, Liechtenstein, Bulgaria or Hungary. In the United Kingdom (England and Wales), the objectives for the curriculum are defined in terms of the skills to be acquired and functions to be accomplished through the use of ICT, rather than in terms of particular tools, techniques and applications to be used.

In addition to the objectives belonging to these categories, the German curriculum includes courses to build awareness of the history of technologies, the problems of intellectual property and the role of the computer in the world of work. In Spain, the Netherlands, the United Kingdom (England, Wales and Northern Ireland), Liechtenstein and the Czech Republic, the curriculum also emphasizes the value of information and the role of ICT within society.

ICT IN MOST CURRICULA AT GENERAL UPPER SECONDARY LEVEL

With the exception of the Flemish Community of Belgium, Italy and the Netherlands, all the countries have included, in 1997/98, ICT in the curriculum of general upper secondary education, in some cases for a long time. Germany was the first to put the subject on its curriculum in the late 1970s; in Slovenia it has been offered since 1974. In Luxembourg ICT was introduced for certain streams in 1983. In 1998, the subject became part of the curriculum in Ireland, Sweden, and Liechtenstein.

FIGURE J17: INCLUSION OF ICT IN THE CURRICULUM.
GENERAL UPPER SECONDARY EDUCATION, 1997/98



Source: Eurydice.

Additional notes

Belgium (B nl): ICT does not yet form part of the curriculum, but the skills to be acquired by the end of secondary education are currently being defined.
Denmark: *Gymnasium* and *HF* courses.
France, Austria, Czech Republic, Slovakia and **Cyprus**: 1st year of general upper secondary education.
Italy: There are no recommendations on the use of ICT in the curriculum, but one of the aims of the *Programma di Sviluppo delle Tecnologie Didattiche* is to use it to improve the effectiveness of the teaching-learning process and to improve the didactic organization both for single subjects and for the acquisition of general skills.
Netherlands: In the new examination programmes introduced in 1998/99, ICT is considered an optional examination subject.
United Kingdom: ICT is compulsory during Key Stage 4 (first two years of compulsory upper secondary education) in England and, as an education theme woven through the main subjects, in Northern Ireland. In Wales, ICT is elective during Key Stage 4. In post-compulsory secondary education, ICT is an elective subject in England, Wales and Northern Ireland.
Poland: 1st or 2nd year of general upper secondary education.

Explanatory note

By curriculum is meant any form of official recommendation regarding subjects to be taught.

In several countries, ICT is offered as an elective subject. In Germany and Bulgaria, ICT is offered as a compulsory subject, as a compulsory option and/or as an elective subject.

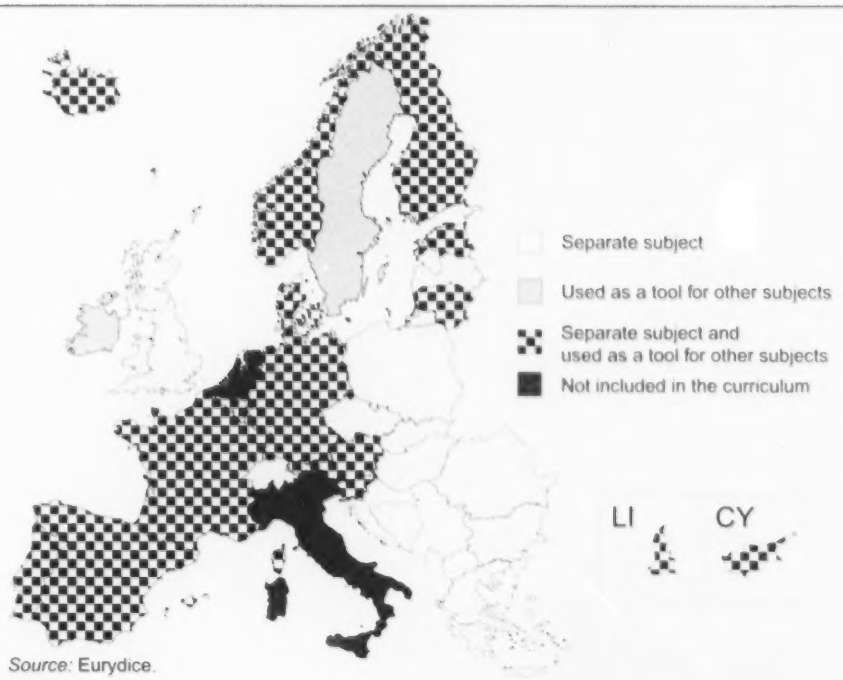
When ICT is included in the curriculum as a compulsory subject, the **number of hours** allocated is generally specified in the curriculum. This varies from 24 hours in Cyprus to 80 hours (maximum) a year in Liechtenstein. If it is an optional subject, the number of hours is sometimes specified. This varies from 60 hours in Slovakia to 143 hours in Norway. Whether the subject is compulsory or optional, the number of hours devoted to it sometimes depends on the school or on the course option chosen (in the German-speaking Community of Belgium, Luxembourg, Finland, Estonia and Slovenia).

The results obtained in this subject are taken into account for **progression** to the next year in the French Community of Belgium, Germany (when the subject is compulsory or compulsory optional), Spain, Italy, Luxembourg, Austria and Portugal, for the UE countries, and in all the pre-accession countries with the exception of Latvia and Cyprus. An **external assessment** is organized for this subject in Luxembourg (for certain course options), the United Kingdom (Scotland), Norway, Bulgaria (in some specialized secondary schools) and Hungary. In the United Kingdom (England, Wales and Northern Ireland), students who study ICT in the first two years of upper secondary education (i.e. last two years of compulsory education) may take an externally certificated qualification (for example a GCSE) in this subject, but this is not compulsory. Some schools in Northern Ireland offer an alternative external accreditation in ICT. Students who choose to study ICT in post-compulsory upper secondary education normally take an externally certificated qualification (for example GCE A level) in this subject.

A grade on the student's annual school report or a **certificate** at the end of general upper secondary education is awarded on the basis of the knowledge and skills acquired in this subject in the German-speaking Community of Belgium, Denmark, Germany, Luxembourg, Austria, Finland, Portugal, the United Kingdom (Scotland), Liechtenstein, the Czech Republic, Lithuania, Hungary, Romania (in upper secondary specialising in ICT), Slovenia and Slovakia.

ICT IS USUALLY TAUGHT AS A SEPARATE SUBJECT IN GENERAL UPPER SECONDARY EDUCATION

FIGURE J18: APPROACHES TO ICT DEFINED IN THE CURRICULUM
GENERAL UPPER SECONDARY EDUCATION, 1997/98


Separate subject
Used as a tool for other subjects
Separate subject and used as a tool for other subjects
Not included in the curriculum
LI
CY

Source: Eurydice.

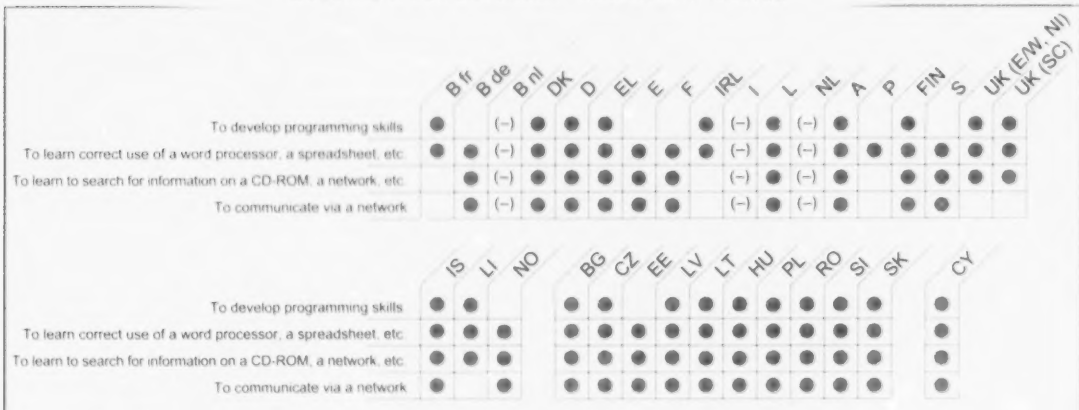
Additional notes

Denmark: *Gymnasium* and *HF* courses.
Netherlands: Since 1998/99, ICT has been introduced a subject with an optional examination.
Finland: The curricula are prepared at the local level on the basis of the national core curriculum. The school can decide to include ICT in the curriculum as an optional subject.
United Kingdom: ICT is compulsory during Key Stage 4 (first two years of upper secondary education) in England and, as an education theme woven through the main subjects, in Northern Ireland. In Wales, ICT is elective during Key Stage 4. In post-compulsory secondary education, ICT is an optional subject in England, Wales and Northern Ireland.

In general upper secondary education, ICT is a separate curriculum subject in nearly all countries, except Ireland, the Netherlands, Portugal and Sweden. It is a compulsory subject during the first year(s) of general upper secondary education in France, Austria, England (Key Stage 4), the Czech Republic, Poland, and Cyprus, and throughout general upper secondary education in Luxembourg, Iceland, Liechtenstein, Bulgaria, Lithuania, Hungary and Slovenia.

In several countries, the general upper secondary curriculum recommends or requires the syllabus to be supplemented by the use of ICT to tackle other subjects or carry out interdisciplinary projects.

FIGURE J19: OBJECTIVES DEFINED IN THE CURRICULUM FOR THE TEACHING OR THE USE OF ICT
GENERAL UPPER SECONDARY EDUCATION. 1997/98



Source: Eurydice.

(–): This subject is not included in the curriculum at this level of education.

Additional notes

Denmark: *Gymnasium* and *HF* courses.
Finland: The curricula are designed at the local level on the basis of the national core curriculum. The schools define the objectives and what is taught on the basis of the national guidelines.
Sweden: ICT is to be used as a tool in the classroom, although basic competencies required for it are not listed.
United Kingdom: In England, Wales and Northern Ireland, students in post-compulsory secondary education electing to study ICT would also be expected to communicate using networks.

Among the EU countries that have incorporated ICT into the curriculum of general upper secondary education, most pursue all categories of **objectives** shown in Figure J19. However, the development of programming skills is not specified at this level of education in the German-speaking Community of Belgium, Spain, France, Portugal and Sweden, and in the EFTA/EEA countries, in Norway. Communication via a network is not one of the objectives or key skills in the French Community of Belgium, Ireland and Liechtenstein. In Portugal, the use of software is the only specific objective targeted.

All the pre-accession countries have fully incorporated ICT into this level of education, and pursue all the aims referred to here, except in Estonia where programming is not included.

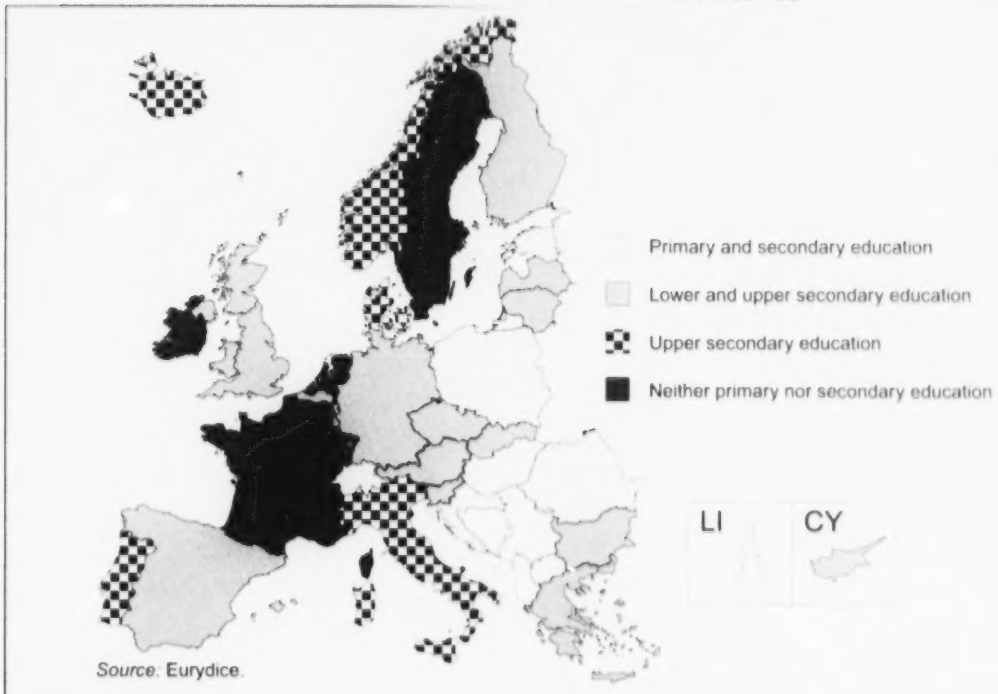
SPECIALIST ICT TEACHERS ARE MOSTLY FOUND AT SECONDARY LEVEL

At primary level, there are **specialist** teachers for the subject information and communication technology in Liechtenstein, and among the pre-accession countries, in Estonia, Hungary, Poland and Romania.

At lower secondary level, teachers are trained as specialists in ICT in a majority of countries. At upper secondary level, there are few countries (the French Community of Belgium, France, Ireland, the Netherlands and Sweden) where there are no specialist ICT teachers.

Their initial training is generally provided at university level. Specialist teachers in Liechtenstein are trained at upper secondary level. Depending on the level of education at which they are to teach, some specialist teachers in the German-speaking and Flemish Communities of Belgium, Austria, Latvia, Hungary and Poland may be trained in non-university tertiary education. The duration of the training of specialist ICT teachers varies from 1.5 - 2 years in Austria (*Hauptschule*) to 7 years in Luxembourg.

FIGURE J20: SPECIALIST ICT TEACHERS.
PRIMARY AND SECONDARY EDUCATION, 1997/98



Source: Eurydice.

Additional notes

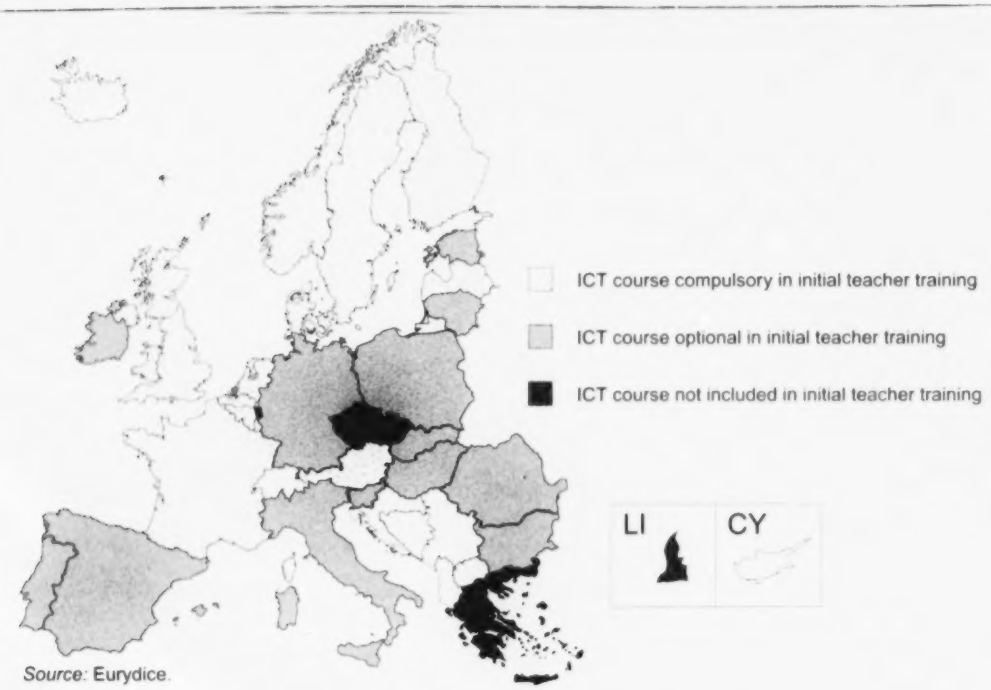
Belgium (B nl): There are specialist ICT teachers in lower secondary education.
Netherlands: In the 1997 ICT programme, ICT coordinators are required to achieve a standard of ICT competence. No initial teacher training is provided for ICT. In secondary education, ICT as a subject is taught by teachers, qualified to teach on the basis of other teaching qualifications.

For **general class teachers** or **specialist teachers in other subjects,** training in ICT is optional during their initial training in some countries of the Union (Germany, Spain, Ireland, Italy and Portugal) and in some pre-accession countries (Bulgaria, Estonia, Hungary, Romania and Slovenia).

On the other hand, training in ICT forms an integral part of compulsory courses for teachers in the French and Flemish Communities of Belgium, Denmark, France, Luxembourg, the Netherlands, Austria, Finland, Sweden, the United Kingdom, Iceland, Norway, Latvia and Cyprus.

In Lithuania, Poland and Slovakia, the universities decide whether this course is compulsory or optional for initial teacher training.

FIGURE J21: ICT COURSES DURING INITIAL TRAINING OF GENERAL CLASS TEACHERS (OR SPECIALISTS IN OTHER SUBJECTS). PRIMARY EDUCATION, 1997/98


ICT course compulsory in initial teacher training
ICT course optional in initial teacher training
ICT course not included in initial teacher training
LI
CY

Source: Eurydice.

Additional notes

Belgium (B nl) and **Netherlands**: The use of ICT is compulsory in initial teaching training, focussing on general basic competencies.
Germany: More and more universities are offering ICT courses as part of initial teacher training.
Ireland: From 1999, ICT course will be compulsory in initial teacher training.
United Kingdom (E/W, NI): An Initial Teacher Training National Curriculum for the use of ICT in subject teaching was introduced in England in September 1998. In Wales, similar arrangements are currently under consultation. There are no plans for statutory requirements in Northern Ireland, but ITT providers are implementing a strategy to achieve equivalent teacher competence.
Bulgaria: Depending on the teacher's specialisation, ICT may or may not be part of initial teacher training.

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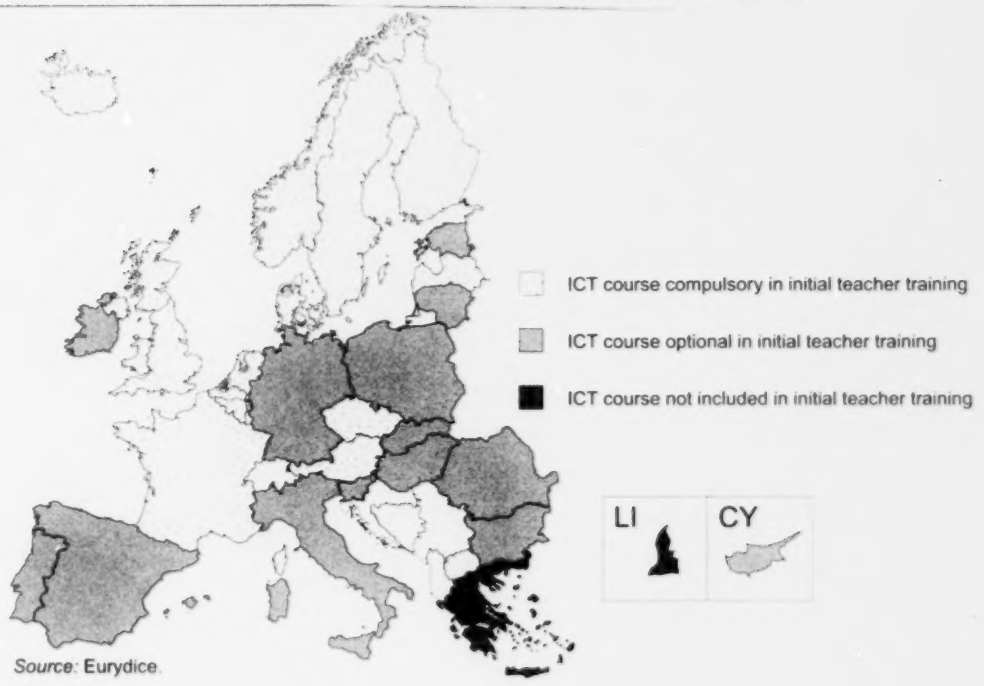
Depending on the country, at secondary level, the initial training of general class teachers or specialist teachers in other subjects may or may not include training in ICT. This training is compulsory in the French Community of Belgium (for lower secondary school teachers), the Flemish Community of Belgium, Denmark, France, Luxembourg, the Netherlands, Austria (for teachers in *Hauptschulen)*, Finland, Sweden, the United Kingdom, Iceland (at lower secondary level), Norway, the Czech Republic and Latvia. It is optional in the German-speaking Community of Belgium, Germany, Spain, Ireland, Italy, Austria (for teachers in *Allgemeinbildenden Höheren Schulen)*, Portugal, Estonia, Hungary, Romania and Slovenia.

In Lithuania, Poland, Slovakia and Cyprus, the universities decide whether this course is compulsory or optional for initial training of secondary school teachers.

FIGURE J22: ICT COURSES DURING INITIAL TRAINING OF GENERAL CLASS TEACHERS (OR SPECIALISTS IN OTHER SUBJECTS). LOWER SECONDARY EDUCATION, 1997/98

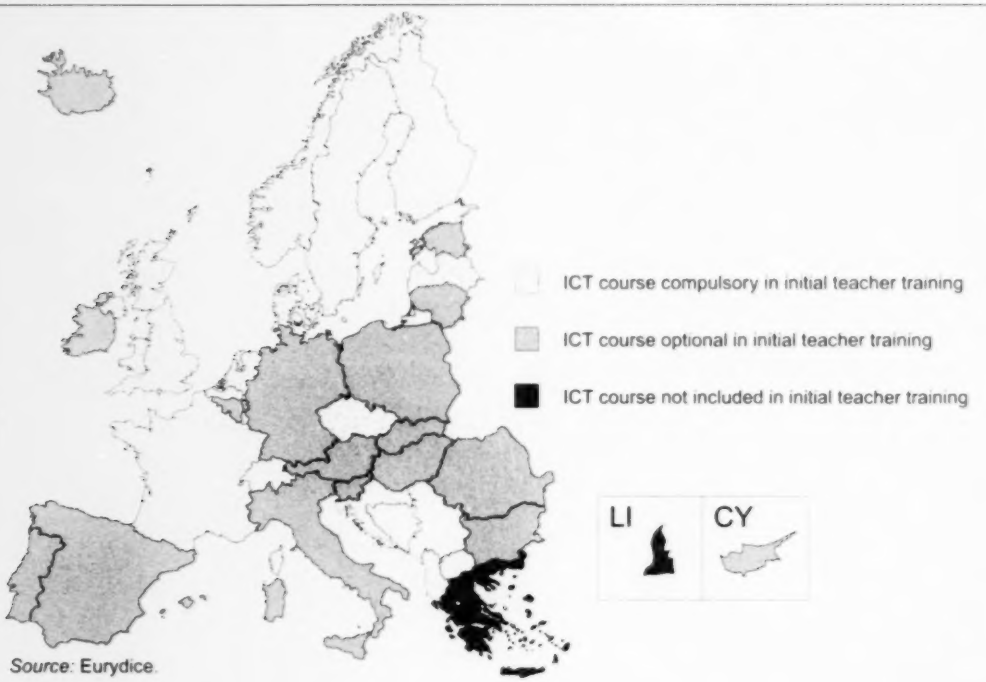

ICT course compulsory in initial teacher training
ICT course optional in initial teacher training
ICT course not included in initial teacher training
LI
CY

Source: Eurydice.

Additional notes

Belgium (B nl) and **Netherlands**: The use of ICT is compulsory in initial teaching training, focussing on general basic competencies.
Germany: More and more universities are offering ICT courses as part of initial teacher training.
Ireland: Since 1999, an ICT course has been compulsory in initial teacher training.
United Kingdom (E/W, NI): An Initial Teacher Training National Curriculum for the use of ICT in subject teaching was introduced in England in September 1998. In Wales, similar arrangements are currently under consultation. There are no plans for statutory requirements in Northern Ireland, but ITT providers are implementing a strategy to achieve equivalent teacher competence.
Bulgaria: Depending on the teacher's specialisation, ICT may or may not be part of initial teacher training.

FIGURE J23: ICT COURSES DURING INITIAL TRAINING OF SPECIALISTS IN OTHER SUBJECTS. GENERAL UPPER SECONDARY EDUCATION, 1997/98


ICT course compulsory in initial teacher training
ICT course optional in initial teacher training
ICT course not included in initial teacher training
LI
CY

Source: Eurydice.

Additional notes:

Belgium (B nl) and **Netherlands**: The use of ICT is compulsory in initial teaching training, focussing on general basic competencies.
Denmark: Depending on the teacher's specialisation, ICT may or may not be part of initial teacher training.
Germany: In several universities, ICT training is compulsory for future teachers of mathematics. More and more ICT courses are being offered to teachers training to be specialists in other subjects, at many universities.
Ireland: Since 1999, an ICT course has been compulsory in initial teacher training.
United Kingdom (E/W, NI): An Initial Teacher Training National Curriculum for the use of ICT in subject teaching was introduced in England in September 1998. In Wales, similar arrangements are currently under consultation. There are no plans for statutory requirements in Northern Ireland, but ITT providers are implementing a strategy to achieve equivalent teacher competence.
Bulgaria: Depending on the teacher's specialisation, ICT may or may not be part of initial teacher training.

IN-SERVICE TRAINING: OFTEN AVAILABLE, RARELY COMPULSORY

All countries that train their teachers in the new technologies have defined policies on in-service training in this field. Most countries have an official plan for in-service training in which updating ICT skills is a priority. In Germany, Latvia and Poland, updating ICT skills is part of an official plan but it is not a priority. Portugal, Bulgaria, the Czech Republic, Estonia, Romania and Cyprus are the exceptions, as they do not have official plans in this area.

At primary level, in-service training in the new technologies is a right and not an obligation for all teachers, whether they be general or specialist teachers. In the United Kingdom, the New Opportunities Fund ICT training programme (funded by the National Lottery) is intended to increase the expertise of all serving teachers in the use of ICT in their teaching, to the level of newly qualified teachers.

At secondary level, in-service training in ICT is compulsory in Germany, Greece, Bulgaria and Latvia, but only for those teachers who specialise in technology. The same applies to specialist teachers at upper secondary level in the German-speaking Community of Belgium, and in Cyprus.

In Sweden, at the different levels of education, there is a government initiative to give teachers support in acquiring and exploiting the opportunities provided by ICT. It starts from school year 1999/2000 and involves 40% of teachers.

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